IN THE CLAIMS:

1. An interventional tool suitable for measuring the temperature of a vessel wall in the body of a patient, the catheter comprising:

an elongated member suitable for insertion in a vessel in the body of a patient, the elongated member having proximal and distal ends;

a plurality of thermal sensors suitable for detecting the temperature of the wall of a vessel the elongated member is inserted into;

an expansion device carried by the elongated member that carries the thermal sensors, the expansion device being suitable for positioning the thermal sensors adjacent the vessel wall; and

a sheath/member that covers the thermal sensors such that the thermal sensors are positioned between the expansion device and the sheath/member.

2. An interventional tool as recited in claim 1 wherein:

the interventional tool takes the form of a catheter;

the elongated member is a flexible tubular member;

the expander includes a first balloon;

the sheath/member is formed from a second balloon material; and

the thermal sensors are sandwiched between the first and second balloons.

3. An interventional combined thermal mapping and drug delivery tool comprising:

an elongated member suitable for insertion in a vessel in the body of a patient, the elongated member having proximal and distal ends;

a plurality of thermal sensors suitable for detecting the temperature of the wall of a vessel the elongated member is inserted into; and

at least one infusion port suitable for delivering therapeutic or diagnostic agents into a vessel.

4. A combined thermal mapping and drug delivery tool as recited in claim 3 wherein at least some of the infusion ports are located between adjacent thermal sensors.

5. An interventional combined thermal mapping and therapeutic agent delivery tool comprising:

an elongated member suitable for insertion in a vessel in the body of a patient, the elongated member having proximal and distal ends;

a multiplicity of thermal sensors suitable for detecting the temperature of the wall of a vessel that the elongated member is inserted into, wherein a plurality of the thermal sensors are longitudinally spaced;

an expansion device carried by the elongated member, the expansion device being suitable for positioning the thermal sensors against the vessel wall; and

at least one infusion port suitable for delivering therapeutic or diagnostic agents into a vessel, the infusion port being positioned between selected thermal sensors to facilitate delivering therapeutic or diagnostic agents into a vessel in the region of the thermal sensors.

6. A combined thermal mapping and therapeutic agent delivery tool as recited in claim 5 wherein at least some of the infusion ports are located longitudinally between selected ones of the thermal sensors.

7. A combined thermal mapping and therapeutic agent delivery tool as recited in claim 5 wherein:

a plurality of the thermal sensors are arranged in a plurality of longitudinally spaced bands, with each band having a plurality of circumferentially spaced thermal sensors; and

a plurality of infusion ports are provided and at least some of the infusion ports are located between adjacent thermal sensor bands.

8. A combined thermal mapping and therapeutic agent delivery tool as recited in claim 5 wherein:

the expansion device is arranged to include a plurality of recesses in an expanded position; and

the infusion ports open into the recesses.

9. A combined thermal mapping and therapeutic agent delivery tool as recited in claim 8 wherein the expansion device includes a balloon arrangement and the recesses extend circumferentially around the balloon arrangement.

10. A combined thermal mapping and therapeutic agent delivery tool as recited in claim 5 further comprising:

a fluid delivery channel for delivering the therapeutic agents to the infusion port; and

a reversible pump coupled to a proximal end of the fluid delivery channel to facilitate pumping the therapeutic agents into a vessel in the region of the thermal sensors, and thereafter withdrawing the therapeutic agents.

11. A thermal mapping catheter comprising:

an elongated flexible tubular member suitable for insertion in a vessel in the body of a patient, the flexible tubular member having proximal and distal ends;

a plurality of thermal sensors suitable for detecting the temperature of the wall of a vessel the elongated flexible tubular member is inserted into; and

at least one anchoring balloon positioned either proximally or distally of the plurality of thermal sensors, the anchoring balloon being suitable for inflation during temperature sensing to occlude the flow of blood through the vessel.

12. A thermal mapping catheter as recited in claim 11, wherein a pair of anchoring balloons are provided, a first one of the anchoring balloons being positioned distally of the thermal sensors and a second one of the anchoring balloons being positioned proximally of the thermal sensors, the anchoring balloons being suitable for cooperating to isolate a segment of the vessel in the region of the thermal sensors.

13. A thermal mapping catheter as recited in claim 12 further comprising at least one infusion port suitable for delivering therapeutic or diagnostic agents into the vessel.

14. A method of obtaining a fluid specimen comprising:

inserting a catheter into a vessel;

using the catheter to detect the temperature of vessel walls to identify a target region within the vessel; and

using the catheter to obtain a fluid specimen from the target region of the vessel.

15. A method of obtaining a fluid specimen as recited in claim 14 further comprising the step of isolating a vessel segment prior to obtaining the fluid specimen, wherein the fluid specimen is taken from the isolated vessel segment.

16. A method of treating vulnerable plaque comprising the steps of:

inserting a catheter into an artery;

using the catheter to detect the temperature of walls of the artery to identify a target region of vulnerable plaque; and

applying a radioactive fluid to the target region of vulnerable plaque using the catheter to facilitate treatment of the vulnerable plaque.

17. A method as recited in claim 16 wherein the radioactive fluid is administered in a manner such that not more than about ten Gray of gamma or beta radiation is delivered to the target region of vulnerable plaque.

18. A method as recited in claim 16 wherein the radioactive fluid further includes one selected from the group consisting of: antibodies, anti-inflammatory agents and antithrombotic agents.

19. A catheter suitable for measuring the temperature of a vessel wall in the body of a patient, the catheter comprising:

an elongated flexible tubular member suitable for insertion in a vessel in the body of a patient, the flexible tubular member having proximal and distal ends;

a plurality of independent longitudinally spaced thermal sensors suitable for detecting the temperature of the wall of a vessel the elongated flexible tubular member is inserted into, the thermal sensors being arranged to output signals suitable to provide a thermal map of a longitudinal section of the vessel.

20 A thermal mapping system including:

a catheter as recited in claim 19; and

a display device arranged to receive the signals from the thermal sensors and display a thermal map of a longitudinal section of the vessel that shows temperature variations along the vessel.

21. A method of thermally mapping a vessel using a thermal mapping catheter that includes an inflatable balloon that carries a plurality of thermal sensors thereon, the method comprising:

inserting the catheter into a vessel;

inflating the balloon;

moving the balloon through the vessel with the balloon inflated to thermally map the vessel.

22. A method as recited in claim 21 wherein the balloon is inflated to a pressure less than the systolic pressure of the vessel.

23. A method of treating a section of a vessel, the method comprising the steps of:

identifying the section of vessel at least in part through the use of thermal mapping of a portion of the vessel using an interventional thermal mapping tool;

inserting a radioactive guide wire into the vessel with the interventional thermal mapping tool in place, wherein the interventional thermal mapping tool is used to at least partially guide the radioactive guide wire into place.

24. A catheter as recited in claim 2 wherein the first and second balloons are integrally formed.